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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,192	03/29/2004	Riad I. Hammoud	DP-310844	5826
<div>7590 09/10/2007</div> <div>STEFAN V. CHMIELEWSKI DELPHI TECHNOLOGIES, INC. Legal Staff MC CT10C P.O. Box 9005 Kokomo, IN 46904-9005</div> <div>EXAMINER PINKNEY, DAWAYNE</div> <div>ART UNIT 2873 PAPER NUMBER</div> <div>MAIL DATE 09/10/2007 DELIVERY MODE PAPER</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,192

Applicant(s)

HAMMOUD, RIAD I.

Examiner

DaWayne A. Pinkney

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2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/20/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 6-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/29/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Aboutalib et al. (US 5, 859, 686).

Regarding **claim 1**, Aboutalib discloses, a method of tracking movement of a subject's eye between first and second successively generated video images after a position of the subject's eye in said first video image has been identified, comprising the steps of:

defining a first state vector for the first video image corresponding to the identified position of the subject's eye (Column 6, lines 45-51);

defining an eye template in said second video image based on said first state (Column 6, lines 51-61), and defining a search window comprising said eye template and a portion of the second video image surrounding said eye template (Column 9, lines 6-13 and Column 10, lines 56-64);

forming a difference image corresponding to differences between said search window and a corresponding portion of said first video image (Column 11, lines 3-12);

identifying at least one eye movement candidate region in the difference image (Column 3, lines 23-37);

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determining a centroid of the eye movement candidate region and extracting a patch from the search window based on the determined centroid (Column 9, lines 36-48); and identifying eyelid motion between the first and second video images when the extracted search window patch has the appearance of an eye, and thereupon updating the state vector for the second video image according to the determined centroid (Column 4, lines 24-44).

Regarding **claim 2**, Aboutalib discloses, the method of claim 1, including the steps of: establishing an eye model defining image characteristics of the subject's eye and a non-eye model defining image characteristics of facial features other than the subject's eye (Column 1, lines 59-67, and Column 2, lines 1-7);

computing deviations of the extracted search window patch from said eye model and said non-eye model (Column 1, lines 59-67, and Column 2, lines 1-40); and

determining that the extracted search window patch has the appearance of an eye when the deviation of the extracted search window patch from the non-eye model is greater than the deviation of the extracted search window patch from the eye model (Column 1, lines 59-61, and Column 2, lines 1-4, and 41-64).

Regarding **claim 3**, Aboutalib discloses, the method of claim 1, including the step of:

identifying a lack of eyelid motion between the first and second video images when the extracted search window patch does not have the appearance of an eye, and thereupon using a correlation technique to identify a location of the subject's eye in the search window and updating the state vector for the second video image based on the identified location (Column 4, lines 24-31, and Column 11, lines 38-64).

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Regarding **claim 4**, Aboutalib discloses, the method of claim 3, including the steps of:

establishing an eye model defining image characteristics of the subject's eye and a non-eye model defining image characteristics of facial features other than the subject's eye (Column 1, lines 59-67, and Column 2, lines 1-7);

computing deviations of the extracted search window patch from said eye model and said non-eye model (Column 1, lines 59-67, and Column 2, lines 1-40); and

determining that the extracted search window patch has the appearance of an eye when the deviation of the extracted search window patch from the non-eye model is greater than the deviation of the extracted search window patch from the eye model (Column 1, lines 59-61, and Column 2, lines 1-4, and 41-64).

Response to Arguments

3. Applicant's arguments filed 06/20/2007 have been fully considered but they are not persuasive.

4. In response to applicant's argument that Aboutalib describes a frame-to-frame eye tracking method that always relies on a correlation process between one or more cut-out pixel blocks from the current frame and a matrix of pixel intensity values from the previous frame. Examiner points out that Aboutalib uses the correlation process to detect blinks in the eye finding process and to confirm the actual eye location (Column 3, lines 38-47).

5. In response to applicant's argument that eye blink detection is only used to pick out the best potential eye location. Examiner points out that Aboutalib discloses that eye blink detection is used to pick out and confirm the actual eye location (Column 3, lines 38-47).

6. In response to applicant's argument that the claimed method detects eyelid motion between two consecutive frames, Aboutalib et al. require several consecutive video frames to detect eye blinking; and whereas the claimed method avoids the need for correlation calculations when eyelid motion is detected, Aboutalib et al. perform the same set of correlation calculations regardless of whether eye blinking is detected. Examiner points out that Aboutalib uses consecutive frames to detect eyelid motion (Column 6, lines 33-40) and uses the correlation process to detect blinks in the eye finding process and to confirm the actual eye location (Column 3, lines 38-47).

Allowable Subject Matter

7. Claims 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art either alone or in combination disclose or teach of the claimed combination of limitations to warrant a rejection under 35 USC 102 or 103. Specifically, in reference to dependent claim 6, none of the prior art either alone or in combination disclose or teach of the claimed method of tracking movement of a subject's eye specifically including, "updating the state vector for the second video image according to a center of the first selected region if said first selected region is determined to be more reliable than said second selected region and updating the state vector for the second video image according to a center of the second selected region if said second selected region is determined to be more reliable than said first selected region."

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DaWayne A. Pinkney whose telephone number is (571) 270-1305. The examiner can normally be reached on Monday-Thurs. 8 a.m.- 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donna L. Ri
DAP
08/30/2007

Scott J. Sugarman
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Primary Examiner